

ATMOSPHERIC ELECTRICITY.

Thunder-storms occurred on the 3d, Ind. T., Tex., Kan.; 4th, Mich., Ill.; 5th, Ky., Fla., Tenn., Ind.; 8th, Fla.; 13th, Tex., Ill.; 16th, Kan.; 17th, Kan., Ind. T., Ill., Iowa, Neb., Mo.; 18th, Ind. T., Kan.; 19th, Tex., Kan., N. M.; 20th, Tex., "most severe thunder-storm ever known;" 21st, Tex.; 22nd, Ala.; 23rd, Tex., Ala., La.; 24th, Ala., Fla.; 27th, Tex.; 28th, Ind. T., Tex., Fla.; 29th, Ind. T., Fla., Tex.; 30th, Ind. T.

Distant Lightning—was reported as follows: 3rd, Ind. T., Tex.; 4th, Ill.; 17th, Kan.; 18th, N. M.; 22d, Tex.; 24th, Ala., Ga.; 26th, Tex., and electricity intense on Pike's Peak.

Auroras.—were observed on the 3rd, in Dak.; 4th, Ga., Dak.; 5th, Dak.; 7th, Iowa, N. Y.; 8th, Iowa; 9th, Conn., Iowa; 12th, Dak.; 28th, Me.

OPTICAL PHENOMENA.

Solar Halos were observed on the 2nd, in Ill.; 3rd, Conn., Ill., Me., Ky., Vt., Wis.; 4th, La., Fla., N. J., Conn.; 5th, Cal., Vt., Neb.; 6th, Cal.; 7th, Ohio, Fla., Ga., Vt.; 8th, Tex., Iowa, S. C.; 9th, Ill., Iowa, La.; 10th, N. Y., Ill., Ind., Iowa, Ohio, Ky., Conn., Wis.; 11th, N. Y., Ohio, Conn., Wis.; 12th, Iowa, N. Y., Conn.; 13th, Cal., Ohio, Conn.; 15th, Col., Me., Neb., La.; 16th, Cal., Neb., Conn.; 17th, Cal., Conn.; 18th, Tex., Ky., N. H.; 19th, Col., Ohio; 20th, Cal., Ala., Me.; 22nd, Conn.; 23rd, Iowa, Ohio; 24th, Ohio, Conn.; 25th, Conn.; 28th, Cal., Ga.; 29th, Md., Mich., N. Y., Pa., Ohio, N. J.; 30th, Ill., Ind., Iowa, N. H.; 31st, Minn., S. C.

Lunar Halos.—8th, Tex., Cal., Iowa, Neb., Mo.; 9th, Ill., Ind., Pa., Tenn., Fla., N. J., Conn., Minn.; 10th, Dak., Neb., Ill., Ind., Iowa, Md., Ohio, Pa., Va., N. J., Fla., Mo., Cal., Idaho, Neb., Minn., Wis.; 11th, Neb., Ind., Iowa, Md., N. Y., Va., N. J., La., Mo., Ohio, Mich., Conn., Nev., Minn.; 12th, Md., Mass., Mich., N. Y., N. J., Mo., Wis., Ohio, Pa., R. I., Conn., Cal., Idaho, Nev.; 13th, Cal., N. Y., Va., Mo., Wis., N. C., Nev., Minn., Tex.; 14th, Cal., Neb., Dak., Iowa, Me., Md., Mass., Mich., N. Y., Vt., N. J., La., Mo., Minn., N. C., R. I., Conn., Cal., Minn., Wis.; 15th, Neb., Ill., Iowa, Mass., Minn., N. Y., Vt., La., Mich., Tenn., N. C., R. I., Idaho, Nev., Minn., Mo., Wis.; 16th, Neb., Ind., Ohio, Vt., Minn., Ohio, N. Y., Conn., Idaho, Nev., Wis.; 17th, Cal., Neb., Mich., Pa., Va., Ohio, N. Y., N. J., Me., Wis.; 18th, Col., Wy. Ty., Ala., Tex., Me., N. Y., Ohio, Vt., Va., Pa., Iowa, Me., Mass.; 19th, Col., Ind. T., Ala., Ohio, Va., N. J., La., Iowa, Conn., Idaho, Nev.; 20th, Col., Ala., Ga., Ill., Iowa, Neb., N. Y., Mo., Tenn., Ind., Fla., Conn., Me.; 21st, Ill., Ind., Iowa, Me., Neb., Ohio, N. J., Mass.; 22nd, Col., Ind., Kan., Va., Ohio, Conn.; 23rd, Iowa, Kan.; 24th, Ind., Iowa, Minn.; 25th, Ind., Kan.; 26th, N. Y.; 27th, N. Y.; 30th, Ga.

Mirage was observed on the 2nd in Dak. and Conn.; 3rd, Ga.; 6th, Minn., Neb.; 7th, Neb.; 8th, Kan., Neb.; 12th, Ga.; 15th, Neb., Ga.; 18th, Kan., Ga., Conn.; 20th, Conn.; 21st, Mass., Conn.; 23rd, Conn.; 24th, Kan., Conn.

MISCELLANEOUS PHENOMENA.

BOTANICAL.—*Connecticut*—New London, dandelions, daisies and dabbies, grass fresh and green; 23th; honeysuckle, pansies and quince in bloom 28th; Suffield, dandelions in bloom. *Dakota*—Pembina, willows and poplars budding during month. *Iowa*—Dubuque, 20th, lilies sprouting and grass growing; Nora Springs, pansies blooming 10th; dandelions in bloom 22nd; trees budding 23rd; Monticello, grass, rhubarb and corn growing during the month. *Indiana*—Logansport, 31st, rose bushes and maple trees budding; Vevay, 28th, japonicas blooming, roses and lilacs leafing; Milford, 18th, wild flowers in bloom. *Illinois*—Anna, strawberries in bloom, 15th; quince and lilac buds showing color, 31st; Martinsville, trees budding and leafing, 26th; shrubs and plants beginning to sprout 31st; Sterling, lilacs budding at the end of the month. *Kansas*—Creswell, 20th, winter wheat growing nicely and looking green as in spring. *Maryland*—Sandy Springs, flowers blooming throughout the month; Fallston, 23th, mountain pinks in bloom. *Massachusetts*—Fall River, flowers in bloom during the month; New Bedford, 6th, violets in bloom; Fitchburg, dandelions, apples, cherries, roses and lilacs blooming; Conway, sap running and sugar made. *Michigan*—Litchfield, dandelions and peach trees in bloom. *Missouri*, Troy, 7th, seeds of asters, hemp, mustard, &c., observed germinating in open ground; Lexington, rose, peach, lilac and other buds unfolding; Clinton, rose, peach and lilac budding, strawberries in bloom; Oregon, dandelions and crocus growing 22nd, rose bushes budding 23rd, wheat and rye growing rapidly 25th. *New Hampshire*, Contoocookville, 30th, blossom buds of the trailing arbutus swelling; Carrol County, trailing arbutus and lilacs in bloom. *Nebraska*—Emerson, 21st, horse-radish sprouting; Plattsmouth, 20th, fruit trees budding. *New Jersey*—Freehold, 23rd, magnolia, lilac, spirea, elm, apple and maple trees budding, rose bushes leafing, and dandelions in bloom throughout the month; Salem, 30th, peach trees in leaf, pear trees blooming, and rose bushes in leaf and budding; Newark, 20th, elm and maple trees budding and leafing; Moorestown, 22nd, dandelions and japonicas in bloom. *North Carolina*—Murphy, pansies, English daisies, forsythia and wild flowers in bloom during last of month. *New York*—Waterburg, 31st, dandelions in bloom; Flushing, 29th, flowers in bloom; Farmingdale, 25th to 31st, dandelions in bloom and lilac buds swollen as in spring. *Ohio*—Bellefontaine, 31st, grass growing and fruit trees budding; Urbana, 23rd, grass green and lilacs budding; 21st dandelions in bloom; Ruggles, wheat sprouting. *Oregon*—Salem, grass and pasturage in excellent

E. F. F. a

condition. *Pennsylvania*—Green Castle, 16th, dandelions in bloom; Tioga, 25th, dandelions in bloom; Chambersburg, 28th to 31st, pansies, dandelions and honeysuckle in bloom; Hulmesville, 8th, dandelions in bloom. *Rhode Island*—Newport, roses, honeysuckle and pansies blooming and grass green. *South Carolina*—Aiken, 16th, jonquils in bloom. *Texas*—Clarksville, wheat and oats look well; cotton-picking nearly finished. *Tennessee*—Nashville, 28th, grass green and growing rapidly. *Virginia*—Alto Vista, 31st, strawberries in bloom; Prospect Hill, 28th, strawberries in bloom; Wytheville, 29th, lilac buds ready to burst, leaflets visible. *Wisconsin*—Embarrass, 31st, buds of the lilac and currant swollen as in spring; grass starting; fall grain looks as forward as that of last fall did the first of June.

Meteors were observed on the 1st, Mo., Gr.; 2nd, Conn., Ind., Iowa, Kan., Md., N. Y.; 3rd, Md., Mo., N. Y., Ohio.; 6th, Ill.; 7th, Ind., La., Mass., N. J., Mo.; 8th, Conn., Iowa, Md., N. Y.; 9th, Ind., Iowa, Md.; 10th, Iowa, N. J., Pa.; 11th, Ind., Iowa, Kan., La., Md., Mass., N. Y., Pa., Mo., Neb.; 12th, Ind., Iowa, La., Md., Mo., Idaho.; 13th, Ind., Kan., Mo.; 15th, Mo.; 16th, Kan., Mass.; 17th, Cal.; 18th, Ga., W. Va.; 23rd, Mass.; 24th, Mass.; 25th, Kan., Me.; 26th, N. Y.; 27th, N. Y.; 28th, N. Y., Vt., Me.; 29th, Md., N. J.; 31st, Conn., Ill., Mass., N. J., Pa. Emerson, Neb., meteors nearly every night during the month. Clear Creek, Neb., 10th, several bright meteors during evening. Indianapolis, Ind., 12th, between 3 and 4 a. m., 51 meteors in 30 minutes. Tybee Island, Ga., 1st, large numbers of faint meteors appeared, 8 to 11 p. m., from east.

Prairie Fires, were reported as follows; on the 2nd, Ind. Ty.; 6th, Kan.; 7th, Kan.; 8th, Kan.; 9th, Dak., Ind. Ty., Kan.; 11th, Ind. Ty., Kan.; 12th, Dak. Kan.; 13th, Kan.; 14th, Dak., Kan.; 15th, Dak., Kan.; 16th, Dak.; 19th, Dak.; 28th, Kan.

Earthquake.—Canada—18th, Beachburg, Ont., between 5 and 6 a. m., two shocks; last one quite severe.

Zodiacal light was observed at Savannah, Ga., on the 1st, 2nd, 3rd and 5th; Southington, Conn., 2nd, 3rd, 7th, 8th, 23rd, 24th to 29th and 31st; St. Mary's Home, Ind., 2nd, 3rd, 7th, 8th, 9th, 11th to 14th; Great Bend, Kan., 7th, 11th; Somerset, Mass., 23rd to 29th and 31st; Rowe, 28th; Cambridge, Mass., Mass., 1st to 3rd, 7th, 23rd to 31st; Oregon, Mo., 15th; Ateo, N. J., 31st; Monticello, Iowa, 31st.

SOLAR PHENOMENA.

Sun spots.—The following observations, made by Mr. D. P. Todd, upon the spots of the sun, have been kindly communicated by Rear Admiral John Rodgers, U. S. N., Superintendent of the Naval Observatory:

Dec., 1877.	No. of new—		Disappeared by solar rotation		Reappeared by solar rotation.		Total number visible.		Remarks.
	Groups	Spots.	Groups	Spots.	Groups	Spots.	Groups	Spots.	
1-4, 12 m.....	0	0	0	0	0	0	1	9	
2-1, 3 p. m....	0	0	0	5	0	0	1	4	
3-4, 3 p. m....	0	0	0	2	0	0	1	2	
6th, 1 p. m....	0	0	0	0	0	0	0	0	
7th, 11 a. m....	0	0	0	0	0	0	0	0	
8th, noon.....	0	0	0	0	0	0	0	0	
9th, 3 p. m....	0	0	0	0	0	0	0	0	
13th, 2 p. m....	0	0	0	0	0	0	0	0	
14th, 11 a. m....	0	0	0	0	0	0	0	0	
16th, 1 p. m....	0	0	0	0	0	0	0	0	
16th, 3 p. m....	0	0	0	0	0	0	0	0	
17th, 11 a. m....	0	0	0	0	0	0	0	0	
18th, 11 a. m....	0	0	0	0	0	0	0	0	
20th, 2 p. m....	1	1	0	0	1	1	1	1	
31st, 11 a. m....	0	3	—	—	—	—	1	4	Two large groups of faculae.

At the Cincinnati Observatory the following observations were taken by Mr. John Given, and communicated by Ormond Stone, Director of Observatory: December 20th, at noon—new groups, 1; new spots, 1. December 21st, at noon—visible, groups, 1; spots, 1.

PUBLISHED BY ORDER OF THE SECRETARY OF WAR.

Albert J. Myer

Copy furnished for

Brig. Gen. (Bvt. Assg'd.) Chief Signal Officer, U. S. A.